AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1.   (Currently Amended) For a digital television packet stream having a plurality of different types of tables, a method to optimize a bandwidth usage of a data stream and to determine issuance intervals for a plurality of event information tables (EITs) to be transmitted in sequenceand a plurality of extended text tables (ETTs) that are inserted in the data stream, wherein the EITs are assigned to cover different ranges of broadcasting time, and an issuance interval for an EIT is a period at which the corresponding EIT is issued, the method comprising:

setting the issuance intervals for the EITs, respectively, to be non-uniform based on the range of broadcasting time which each of the EITs is assigned to cover,

wherein among the EITs, the issuance interval for an EIT covering a range of broadcasting time nearer a current time is set to be less than the issuance interval for an EIT covering a range of broadcasting time further in the future; and

setting a uniform issuance interval for a plurality of extended text tables (ETTs)ETTs to be transmitted in sequence, wherein the ETTs contain program description information associated with the EITs, respectivelyrespectively;

inserting the EITs at the non-uniform issuance intervals, respectively, into the data stream; and

inserting the ETTs at the uniform issuance interval, respectively, into the data stream.

2.   (Canceled)

3.   (Canceled)

4.   (Currently Amended) For a digital television packet stream having a plurality of different types of tables, a method to <u>optimize a bandwidth usage of a data stream and to</u> determine issuance intervals for a plurality of event information tables (EITs)<u> and a plurality of extended text tables (ETTs) that are inserted into the data stream</u>, the method comprising:

setting the issuance intervals for the EITs, respectively, to be non-uniform, wherein an issuance interval between any two adjacent instances of an ith EIT is determined according to the following equation:

$$\text{interval } (i^{th} \text{ EIT}) = \text{root\_time} + (\text{increment\_time})*i,$$

wherein interval(i^{th} EIT) is the interval between any two adjacent instances of the ith EIT, root_time is a predetermined interval for the EIT corresponding most closely in time to the present, increment_time is a non-zero scalar and i is a non-zero integer; ~~and~~

setting a uniform issuance interval for ~~a~~<u>the</u> plurality of ~~extended text tables~~ ~~(ETTs)~~<u>ETTs</u> to be transmitted in sequence, wherein the ETTs contain program description information associated with the EITs, ~~respectively~~<u>respectively:</u>

<u>   inserting the EITs at the non-uniform issuance intervals, respectively, into the data stream; and</u>

<u>   inserting the ETTs at the uniform issuance interval, respectively, into the data stream</u>.

5.   (Canceled)

6.   (Currently Amended) A program and system information protocol (PSIP) generator to <u>optimize a bandwidth of</u>~~generate tables for~~ a digital system packet ~~stream,~~<u>stream and to insert a plurality of event information tables (EITs) and a plurality of extended text tables (ETTs) into the digital system packet stream,</u> the generator comprising:

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an interface to supply issuance-interval setting information required for setting

issuance intervals respectively for a~~the~~ plurality of ~~event information tables (EITs)~~EITs to

be transmitted in sequence, wherein an issuance interval for an EIT is a period at which

the corresponding EIT is issued, and the issuance-interval setting information is an

assignment of each of the EITs to cover one of different ranges of broadcasting time; ~~and~~

an interval determination unit to determine non-uniform issuance intervals

respectively for the EITs, based upon the issuance-interval setting information, and to

determine a uniform issuance interval for a~~the~~ plurality of ~~extended text tables~~

~~(ETTs)~~ETTs to be transmitted in sequence, the ETTs containing program description

information associated with the EITs, respectively,

wherein among the EITs, the issuance interval for an EIT covering a range of

broadcasting time nearer a current time is set to be less than the issuance interval for an

EIT covering a range of broadcasting time further in the ~~future~~future; and

wherein the generator inserts the EITs at the non-uniform issuance intervals and

the ETTs at the uniform issuance interval determined by the interval determination unit

into the digital system packet stream .

7.   (Canceled)

8.   (Canceled)

9.   (Currently Amended) A program and system information protocol (PSIP)

generator to ~~generate tables~~ optimze a bandwidth for a digital television system packet

stream and to insert a plurality of event information tables (EITs) and a plurality of

extended text tables (ETTs) into the digital system packet stream, the generator

comprising:

an interface to supply issuance-setting information required for setting issuance

intervals for a~~the~~ plurality of ~~event information tables (EITs)~~EITs to be transmitted in

sequence; ~~and~~

an interval determination unit to determine non-uniform issuance intervals

respectively for the EITs based upon the issuance-setting information, and to determine a

uniform issuance interval for ~~a~~the plurality of ~~extended text tables (ETTs)~~ETTs to be

transmitted in sequence, the ETTs containing program description information associated

with the EITs, respectively,

wherein among the EITs, an issuance interval between any two adjacent instances

of an ith EIT is determined according to the following equation:

$$interval(i^{th}\ EIT) = root\_time + (increment\_time)*i,$$

wherein $interval(i^{th}\ EIT)$ is the interval between any two adjacent instances of the

i^{th} EIT table, root_time is a predetermined interval for the EIT corresponding most closely

in time to the present, increment_time, increment_time is a non-zero scalar and i is a non-

zero ~~integer~~integer; and

wherein the generator inserts the EITs at the non-uniform issuance intervals and

the ETTs at the uniform issuance interval determined by the interval determination unit

into the digital system packet stream.

10.   (Canceled)

11.   (Original) The PSIP generator of claim 6, wherein said PSIP generator is

embodied in the form of a processor running software.

12.   (Previously Presented) The PSIP generator of claim 11, wherein said software is

written in the computer language Java.

13.   (Previously Presented) A processor-readable article of manufacture having

embodied thereon software comprising a plurality of code segments to perform the

method of claim 1.

14.   (Original) A processor-readable article of manufacture having embodied thereon software comprising a plurality of code segments to cause a processor to perform the functional aspects of the program and system information protocol (PSIP) generator of claim 6.

15.   (Previously Presented) The method of claim 1, wherein the EITs include EIT-0, EIT-1, and EIT-2.

16.   (Previously Presented) The method of claim 15, wherein in the setting step, the issuance intervals are set respectively for EIT-0, EIT-1, and EIT-2 to increase as the EIT table number increases.

17.   (Previously Presented) The PSIP generator of claim 6, wherein the EITs include EIT-0, EIT-1, and EIT-2.

18.   (Previously Presented) The PSIP generator of claim 17, wherein the non-uniform interval determination unit determines to increase the issuance intervals respectively for EIT-0, EIT-1, EIT-2 as the EIT table number increases.

19.   (Currently Amended) A method of optimizing a bandwidth of a data stream and determining transmission cycles of a group of event information tables (EITs) including at least EIT-0, EIT-1, and EIT-2, and transmission cycles of a group of extended text tables (ETTs) that are inserted into the data stream, the method comprising:

setting the transmission cycles of the group of EITs to be non-uniform with respect to each other, based on closeness in coverage time to which each EIT in the group of EITs is assigned, to a current broadcasting time,

wherein among the group of EITs, the transmission cycle of an EIT assigned to a coverage time nearer the current time is set to be less than the transmission cycle of an EIT assigned to a coverage time further in the future from the current broadcasting time; and

setting a uniform transmission cycle of ~~a~~the group of extended text tables (ETTs)

including at least ETT-0, ETT-1 and ETT-2, wherein the ETTs contain program

description information associated with the EITs, ~~respectively~~respectively;

inserting the EIT-0, EIT-1, and EIT-2 at the non-uniform transmission cycles into

the data stream; and

inserting the ETT-0, ETT-1 and ETT-2 at the uniform transmission cycles into the

data stream.

20.   (Previously Presented) The method of claim 19, wherein in the setting step, the

transmission cycles are set respectively for EIT-0, EIT-1, and EIT-2 in the group of EITs

to increase as the EIT table number increases.

21.   (Currently Amended) A method of optimizing a bandwidth of a data stream and

determining transmission cycles of a group of different event information tables (EITs)

including at least EIT-0, EIT-1, and EIT-2, and transmission cycles of a group of

different extended text tables (ETTs) including at least ETT-0, ETT-1 and ETT-2 that are

inserted into the data stream, the method comprising:

systematically incrementing the transmission cycles of the group of EITs to be

non-uniform with respect to each other, based on closeness in coverage time to which

each EIT in the group of EITs pertains, to a currently broadcasting time,

wherein among the group of EITs, the transmission cycle of an EIT pertaining to a

coverage time nearer the current broadcasting time is set to be less than the transmission

cycle of an EIT pertaining to a coverage time further in the future from the currently

broadcasting time; ~~and~~

setting a uniform transmission cycle for ~~a~~the group of different ~~extended text~~

~~tables (ETTs)~~ETTs including at least ETT-0, ETT-1 and ETT-2, wherein ETTs contain

program description information associated with the EITs, ~~respectively~~respectively;

inserting the group of different EITs including at least EIT-0, EIT-1, and EIT-2 at

the systematically incremented transmission cycles into the data stream; and

inserting the group of different ETTs including at least ETT-0, ETT-1, and ETT-2

at the transmission cycle that is uniform into the data stream.

22.   (Currently Amended) A method of <u>optimizing bandwidth of a digital television</u> <u>packet stream and</u> determining issuance intervals for tables to be included in a<u>the</u> digital television packet stream, the method comprising:

setting issuance intervals for a plurality of event information tables (EIT_0, EIT_1, and EIT_2) and a plurality of extended text tables (ETT_0, ETT_1, and ETT_2) to be transmitted in sequence according to the following conditions:

issuance interval (EIT_{i-1}) < issuance interval (EIT_i) for i=1 and 2, and

issuance interval (EIT_{i-1}) = issuance interval (EIT_i) for i=1 and 2,

wherein an issuance interval for an EIT is a period at which the corresponding EIT is issued within a packet stream, and range of broadcasting time covered by EIT_{i-1} is prior to a range of broadcasting time covered by EIT_i, and

wherein the ETTs contain program description information associated with the ~~EITs~~<u>EITs</u>;

<u>inserting the plurality of EITs (EIT_0, EIT_1, and EIT_2) at the issuance intervals of</u> <u>the plurality of EITs into the digital television packet stream; and</u>

<u>inserting the plurality of ETTs (ETT_0, ETT_1, and ETT_2) at the issuance intervals</u> <u>of the plurality of ETTs into the digital television packet stream.</u>

23.   (Currently Amended) A program and system information protocol (PSIP) generator to <u>optimize a bandwidth of a digital television system packet stream and to</u> generate tables for a digital television system packet stream, the generator comprising:

an issuance interval determination unit to set issuance intervals for a plurality of event information tables (EIT_0, EIT_1, and EIT_2) and a plurality of extended text tables (ETT_0, ETT_1, and ETT_2) to be transmitted in sequence according to the following conditions:

issuance interval (EIT_{i-1}) < issuance interval (EIT_i) for i=1 and 2, and

issuance interval (ETT_{i-1}) = issuance interval (ETT_i) for i=1 and 2,

wherein an issuance interval for an EIT is a period at which the corresponding

EIT is issued within a packet stream, and a range of broadcasting time covered by EIT_{i-1}

is prior to a range of broadcasting time covered by EIT_i, and

wherein the ETTs contain program description information associated with the

~~EITs~~EITs; and

_____ inserting the plurality of EITs (EIT_0, EIT_1, and EIT_2) at the issuance intervals of

the plurality of EITs into the digital television system packet stream; and

_____ inserting the plurality of ETTs (ETT_0, ETT_1, and ETT_2) at the issuance intervals

of the plurality of ETTs into the digital television system packet stream.

24.   (Currently Amended) A method of optimizing a bandwidth of a digital television

packet stream and determining transmission cycles for tables to be transmitted as part of a

digital television packet stream, the method comprising:

setting transmission cycles for a plurality of event information tables (EIT_0, EIT_1,

and EIT_2) and a plurality of extended text tables (ETT_0, ETT_1, and ETT_2) to be

transmitted in sequence according to the following conditions:

transmission cycle (EIT_{i-1}) < transmission cycle (EIT_i) for i=1 and 2, and

issuance interval (ETT_{i-1}) = issuance interval (ETT_i) for i=1 and 2,

wherein a transmission cycle for an EIT is a period at which the corresponding

EIT is transmitted, and a range of broadcasting time covered by EIT_{i-1} is prior to a range

of broadcasting time covered by EIT_i, and

wherein the ETTs contain program description information associated with the

~~EITs~~EITs;

_____ inserting the plurality of EITs (EIT_0, EIT_1, and EIT_2) at the transmission cycles of

the plurality of EITs into the digital television packet stream; and

_____ inserting the plurality of ETTs (ETT_0, ETT_1, and ETT_2) at the issuance intervals

of the plurality of ETTs into the digital television packet stream.

25.   (Currently Amended) A program and system information protocol (PSIP) generator to <u>optimize a bandwidth of a digital television packet stream and to </u>generate tables to be transmitted as part of a digital television packet stream, the ~~method~~<u>generator</u> comprising:

a transmission cycle determination unit to set transmission cycles for a plurality of event information tables(EIT_0, EIT_1, and EIT_2) and a plurality of extended text tables (ETT_0, ETT_1, and ETT_2) to be transmitted in sequence according to the following conditions:

transmission cycle (EIT_{i-1}) < transmission cycle (EIT_i) for i=1 and 2, and

issuance interval (ETT_{i-1}) = issuance interval (ETT_i) for i=1 and 2,

wherein a transmission cycle for an EIT is a period at which the corresponding EIT is transmitted, and a range of broadcasting time covered by EIT_{i-1} is prior to a range of broadcasting time covered by EIT_i, and

wherein the ETTs contain program description information associated with the ~~EITs~~<u>EITs;</u>

<u>   wherein the generator inserts the plurality of EITs (EIT_0, EIT_1, and EIT_2) at the transmission cycles of the plurality of EITs into the digital television packet stream; and</u>

<u>   the generator inserts the plurality of ETTs (ETT_0, ETT_1, and ETT_2) at the issuance intervals of the plurality of ETTs into the digital television packet stream.</u>

26.   (Currently Amended) ~~A digital television (DTV) signal embodied~~<u>Instructions encoded</u> on at least one computer-readable medium for use in a digital broadcast receiver, ~~the DTV signal comprising~~<u>which when executed by a processor causes the processor to at least generate</u>:

a ~~DTV~~<u>digital television (DTV)</u> packet stream including a plurality of event information tables (EITs) to be transmitted in sequence, the EITs being assigned to cover different ranges of broadcasting time,

wherein the EITs are issued periodically within the packet stream at non-uniform periods, respectively, such that an issuance period for an EIT covering a range of broadcast time nearer a current time is set to be less than an issuance period for an EIT covering a range of broadcasting time further in the future, and

wherein the ~~DTV packet stream further includes~~processor further generates at least a plurality of extended text tables (ETTs) to be transmitted in sequence, the ETTs containing program description information associated with the ETTs and being issued periodically within the packet stream at a uniform ~~period~~period,
the processor further inserting the EITs at the non-uniform periods into the DTV packet stream; and
the processor further inserting the ETTs at the uniform period into the DTV packet stream.

27.   (Currently Amended) ~~A digital television (DTV) signal embodied~~Instructions encoded on at least one computer-readable medium for used in a digital broadcast receiver, which when executed by a processor causes the processor to at least generate~~the DTV signal comprising~~:

a ~~DTV~~digital television (DTV) packet stream including a plurality of event information tables(EIT$_0$, EIT$_1$, and EIT$_2$) and a plurality of extended text tables (ETT$_0$, ETT$_1$, and ETT$_2$) to be transmitted ~~in sequence~~, which are periodically repeated within the packet stream according to the following conditions:

transmission cycle (EIT$_{i-1}$) < transmission cycle (EIT$_i$) for i=1 and 2, and
transmission cycle (ETT$_{i-1}$) = transmission cycle (ETT$_i$) for i=1 and 2,

wherein a transmission cycle for an EIT is a frequency at which the corresponding EIT is transmitted, and a range of broadcasting time covered by EIT$_{i-1}$ is prior to a range of broadcasting time covered by EIT$_i$, and

wherein the ETTS contain program description information associated with the ~~EITs~~EITs,
wherein the processor inserts the plurality of EITs (EIT$_0$, EIT$_1$, and EIT$_2$) at the transmission cycles of the EITs into the DTV packet stream, and

the processor inserts the plurality of ETTs (ETT_0, ETT_1, and ETT_2) at the transmission cycle of the ETTs into the DTV packet stream.